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| 10/580,727 | 07/03/2007 | Henrik Stender | 60218(48497) | 6468 |

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| EXAMINER | |
|---|---|
| DUFFY, PATRICIA ANN | |
| ART UNIT | PAPER NUMBER |
| 1645 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/580,727 | STENDER ET AL. | |
| | Examiner | Art Unit | |
| | Patricia A. Duffy | 1645 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 September 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3-13,25,26 and 30* is/are pending in the application.

4a) Of the above claim(s) *51-61* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-13,25,26 and 30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *sequence alignments*.

## DETAILED ACTION

The response and amendment filed 9-18-09 have been entered into the record. Claims 3-13, 25, 26, 30 and 51-61 are pending.

### *Election/Restrictions*

Applicant's election with traverse of Group II, claims 25-34 PNA probe set in the response filed 9-18-09 is acknowledged. The traversal is on the ground(s) that the claims are now all drawn to a probe set and as such have unity of invention and no species election is necessary. Inasmuch as the elected invention is now drawn to a probe set per se, the restriction among the particular probes is withdrawn in view of the cancellation of the claims. It is noted that the kits are not drawn to the elected probe set commensurate with the elected invention and as such, claims 51-61 remain withdrawn from consideration.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-13, 25, 26 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The claims as amended on 9-18-09 recite that the PNA probes are at least 86% identical to SEQ ID NOs:6, 7 and 8. The specification teaches at pages 15-16 (bridging paragraph) that "Consequently, the probing nucleobase sequence may be only as much as 86% homologous to the probing nucleobase sequences identified above." This does not provide conception for the recitation of "at least 86% identical" to the probe set because the concept of homology and identity are not the same. Homology scores conservative substitutions as a match whereas identity does not. Additionally, the concept of variation of "at least 86%" does not have written description in the specification as filed as only a single point is described and "only as much as 86% homologous" identifies only a lower limit and that specific passage does not convey the range above 86%.. that is, it does not support the now claimed range. As such, the specification as originally filed does not support conception of percent identity or the range of "at lease 86%".

Claims 3-13, 25, 26 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims recite a probe set "at least 86% identical to SEQ ID NO:6, SEQ ID NO:7 and SEQ I DNO:8.". Dependent claims recite probes suitable for analysis of S. epidermidis, S. hominis, S. haemolyticus, S. lugdunesis, S. saprophyticus. The specification teaches:

TCT-AAC-ATG-TTC-TIT (Seq. Id. No. 1) targeting *Staphylococcus epidermidis,*

TCT-AGT-CTG-TTC-TTT (Seq. Id. No. 2) targeting*Staphylococcus saprophyticus,*

TCT-AAT-ATA-TTC-CTT (Seq. Id. No. 3) targeting *Staphylococcus haemolyticus,*

TCT-AAT-ATA-TAC-TTT (Seq. Id. No. 4) targeting *Staphylococcus warned,*

GCT-CCA-AAT-GGT-TAC (Seq. Id. No. 5) targeting several *Staphylococcus* species other than *Staphylococcus aureus,*

TCC-TCG-TCT-GTT-CGC (Seq. Id. No. 6) targeting *Staphylococcus epidermidis,*

CTC-CTT-ATC-TGT-TCG-C (Seq. Id. No. 7) targeting *Staphylococcus saprophyticus,*

CTC-CTT-GTC-TGT-TCG-C (Seq. Id. No. 8) targeting *Staphylococcus haemolyticus,*

CTT-CTC-ATC-TGT-TCG-C (Seq. Id. No. 9), targeting *Staphylococcus sciud,*

TCC-TCG-TCC-GTT-CGC (Seq. Id. No. 10), targeting *Staphylococcus schleifed,* and TCC-TTG-TCC-GTT-CGC (Seq. Id. No. 11) targeting a variant of *Staphylococcus schleiferi.* (specification page 5). The specification also teaches the use of the probe set of SEQ ID NOs; 6, 7 and 8 (CNS3, CNS4 and CNS5 respectively) at Example 5, pages 28-29 of the specification.

The specification does not teach variants of SEQ IN NOS:6, 7 or 8. The specification does not teach the "target sequence" in genome or nucleobase sequence of the microorganism such that the skilled artisan would be able to readily envision other PNA probes for targeting. The specification teaches that they are directed to a "phylogenetically conserved region of rRNA target sequence that varies slightly between *Staphylococcus* species". However, the specification does not describe what rRNA sequence that is the target. It does not teach the nucleobase sequence(s) of the "rRNA"

phylogenically conserved sequence. The specification does not teach the "target sequences" or the nucleobase sequences from the phylogenically conserved rRNA sequences of the recited *Staphylococcus* species, such that one skilled in this art could readily envisage variants that are useful for detection.

The courts have held that when the specification discloses at most a specific DNA segment known to the inventor, the disclosure is not commensurate with the claims (*Ex parte Maizel*, 27 USPQ2d 1662). Other than identifying the specific probes of SEQ I NDOS: 6, 7 and 8, the specification does not teach those nucleobases within each that that can be inserted, substituted or deleted, to arrive at a variant that maintains functionally of the probe set as described in the specification as useful for detection of Staphylococcus spp. Although the disclosure would put the skilled artisan in possession of multiple different individual single substitutions, insertions or deletions that may or may not retain inducible activity, the level of skill and knowledge in the art is such that one of ordinary skill would not be able to identify without further testing, which of those nucleic acids that have the claimed activities because the specification does not disclose the target sequence. The specification lacks written description of the target nucleobase rRNA stuctures of the Staphylococcus species of the alleged phylogenetically conserved region. *Vas-Cath Inc. v. Mahurkar*, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116.). As such, the skilled artisan would not readily appreciate from the comparison that Applicants were in possession of the now claimed invention. The courts have held that possession of a genus may not be shown by merely describing how to obtain members of the claimed genus (i.e. make and test to see if

they lack the requisite activity) or how to identify their common structural features. See *University of Rochester*, 358 F.3d at 927, 69 USPQ2d at 1895 and *Ex Parte Kubin et al*, Appeal 2007-0819, May 31, 2007. In addition, the court has held that a method of identification of compounds (i.e. screening for variants) is not a description of the compounds *per se* that meet the requisite function to use in the associated methods. *University of Rochester v. G.D. Searle & Co.* 69 USPQ2D 1886 (CAFC 2004. Finally, function of a probe does not describe a structure, because the specification does not provide relevant identifying characteristics , including functional characteristics when coupled with known or disclosed correlation between function and structure. The courts have held that in these instances, the specification lacks written description see *Enzo Biochem Inc. v. Gen-Probe Inc.* 63 USPQ2D 1609 (CAFC 2002) and *University of Rochester v. G.D. Searle & Co.* 69 USPQ2D 1886 (CAFC 2004). When the genus is large and the specification lacks a known (art described) or disclosed correlation between structure and function, the written description of the specification does not convey possession of the claimed genus of 86% identical variants of SEQ ID NOS:6, or 7 or 8 as claimed.

Claim 3-13, 25, 26, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 25 and all dependent claims, it is unclear from the claim construction how many probes must be present in the probe set, at least three ?

As to claim 3, the term "the Staphylococcus probe" is indefinite inasmuch as it lacks antecedent basis in the independent claim 25.

As to claims 3-13, the claims are prima facie indefinite as the term "the PNA probe of claim 25", lacks clear and unambiguous support in the independent claim 25 from which

they depend. Claim 25 is directed to a PNA probe set and not a probe per se and as such, it is unclear to which of the probes in the probe set, the dependent claims reference.

As to claims 3-13, the claims are also confusing in that the claims recite "a target sequence" and the specification teaches that the target sequence is a nucleobase sequence and the claims do not recite a nucleobase sequence. The claims merely reference a type of nucleobase but do not reference a particular nucleobase sequence. As such, the claims as written are insolubly indefinite.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

*It is noted that the instant claims do not enjoy priority to the provisional document 60/525,591 filed 11-26-03. As such, the claims have been accorded the filing date of 11-24-04 for prior art purposes.*

Claims 3-13, 25, 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashida et al (WO 03/106676 published 12-24-2003) in view of Ray et al (FASEB Journal, 14:1041-1060, 2000).

Hashida et al teach probe sets for the detection and identification of *S. hominis* (page 36, SEQ ID NOS 43, 44 and 45), *S. warneri* (page 37, SEQ ID NOS: 46, 47 and 48), *S. haemolyticus* (page 38, SEQ ID NOS: 49, 50 and 51), *S. epidermidis* (page 41, SEQ ID NOS:57, 58 and 59), *S. aureus* (page 56, SEQ ID NOS: 96, 97 and 98) and *S. saprophyticus* (page 67, SEQ ID NOS:122, 123 and 124). Hashida et al teach probe sets for use in the identification of microorganisms (see claims 2, 17, 18, 19, 22, 37, 47 and 48). Hashida et al teach that the probes are derived and specific for V1, V2 and V3 regions of 16S rRNA of a indicated microorganism. Hashida et al teach that the probes can be labeled. Hashida et al teach that SEQ ID NOs:43 and 57 are 100% identical as compared to SEQ ID NO:6. Hashida et al teach that SEQ ID NO:46 is 100% identical as compared to SEQ ID NO:7. Hashida et al teach that SEQ ID NO:49 is 100 % identical as compared to SEQ ID NO:8. Hashida et al differ by not teaching PNA probes corresponding to the nucleobases.

Ray et al teach that peptide nucleic acid probes are chemically stable and resistant to hydrolytic (enzymatic degradation; page 1041 abstract). Ray et al teach that despite the backbone variations from natural nucleic acids, PNA is still capable of sequence-specific binding to DNA as well as RNA obeying the Watson-Crick hydrogen bonding rules. Furthermore, the hybrid complexes exhibit extraordinary thermal stability and display unique ionic strength properties. Ray et al teach that PNA probes are useful for diagnostic purposes.

It would have been *prima facie* obvious to make PNA probes corresponding to the *Staphylococcus* probe sequences of Hashida et al and combine the probes for all the *Staphylococcus* spps in a probe set optionally labeled, to discriminate among the *Staphylococcal* spp for diagnostic and detection purposes.

***Status of the Claims***

Claims 3-13, 25, 26 and 30 stand rejected. Claims 51-61 are withdrawn from consideration.

***Conclusion***

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia A. Duffy whose telephone number is 571-272-0855. The examiner can normally be reached on M-Th 6:30 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor Robert Mondesi can be reached at 571-272-0956.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Patricia A. Duffy/
Primary Examiner